

Date: August 28, 2001

Shift: Morning

ISO Element(s): 4.1 Management Review

Auditee Organization Code: DE01, AD01, AD40, ED01, ED03, TD01

Building: 4200, Rm. 1201

N: What is your trend to/definition of “full scope”?

A: Everything not in flight operations, etc. Center Operations and Human Resources are not currently [completely] under scope [for the 1994 version]. TD has been split into two program offices and is still sorting things out. There is a service organization to the 2nd Generation and Shuttle Offices. TD01 auditee has propulsion area under him. [In short,] ALL the Center will go under ISO when we get 9K2K certification. Marshall is now also working toward VPP [Voluntary Protection Program] star certification. We delayed going to ISO full scope until this November and VPP certification until next year.

N: What is star certification?

A: ISO basically checks to see if we “are doing what we say we are doing.” VPP has specific criteria we must follow in order to get certified.

N: You mentioned, “resources are down”?

A: Yes. We need a lot of people to perform our job right, but we have “flattened out” and were on a downward trend [less people to do more work]. We hope that this will improve.

N: Any reorganizations in upper management?

A: A little over two years ago there was a large reorganization, then nothing much. Recently the TD organization split, but this is not official yet. It is still at [NASA] Headquarters.

N: Since you are you gearing up for 9K2K, are you carrying dual systems?

A: No. There is one system, but it includes 9K2K. 9K2K has been folded into our processes. We were more aggressive in our approach to ISO in some areas and already met 9K2K requirements.

N: Did you perform management review for 9K2K?

A: Yes. Our last Marshall Quality Council (MQC) was held August 15, 2001.

N: Do you hold them [MQC meetings] twice a year?

A: We have a minimum of 2 meetings per year, but usually hold them quarterly. The Center Director chairs the meetings and all the direct reports are included in the meetings.

N: Do these meetings include the quality management system?

A: Yes. Our document requires the MQC to meet at least twice per year.

N: I have no more questions right now since you are changing systems from 1994 to 9K2K, but I will get back with you [management] this afternoon if any questions arise.

A: DE01 committed to being at the morning and afternoon briefings

N: Audit areas will be selected tomorrow. I don't want to look at newly started projects, but rather want to see mature projects.

TD offered ProSEDS as a possible mature project area to audit, however, since it was audited the last two audits, he wanted to look at something different.

Date:	August 28, 2001
Shift:	Morning
ISO Element(s):	4.17 Internal Audits
Auditee Organization Code:	QS40
Building:	4202, Rm. 302C

N: Talk to me about internal audits. How do you put together a schedule and assign auditors? What do you have in mind about auditors? Their training?

A: Auditee discussed the training of ISO auditors at Marshall.

N: This is for 9K2K training. What was done for training to ISO 1994 version?

A: The same type of training was given for 1994 version of ISO 9000.

N: All auditors go through training?

A: Yes

N: It doesn't matter who does training as long as it is certified.

A: NQA will do our training from now on unless a special need arises that we'd have to go outside the new contract.

N: What about auditors for 1994 version and scope? Have any new auditors been added?

A: Yes. In fact, the scribe is a new auditor.

N: [To scribe] Tell me about the training you received, where it was, who taught it, what audits have you been on, etc.

A: Scribe discussed audit training and process for becoming an auditor. Also discussed going on audit "under instruction."

N: [Back to auditee] Do you use a checklist?

A: Yes. Auditors review pertinent documents/directives and highlight areas that have specific requirements. Auditee discusses those areas with the team and instructs them to look for tangible things that can be brought back to the lead auditor.

N: What is your title?

A: Audit Manager

N: Do you know the quality policy?

A: To provide quality products and services to our customers.

N: Let me see your audit schedule.

A: Viewed and discussed internal audit schedule, what organizations were audited, etc.

N: What does green [on the audit schedule] mean? “To provide”?

A: Each organization is required to provide a certain number of auditors.

N: Why so many people assigned to audit? It seems it would “water down” their skills if they don’t do an audit for 2 years. Suggestion: get a core group of auditors and to have people audit about one audit a quarter or so. (I would question someone who hasn’t done an audit in a year or two.) The core group of auditors can be changed every couple years, but you need to keep them (the core group) current with ISO. Talk to management about it.

A: We recognize the issue and are working on it. Audits usually last a week each plus several planning sessions prior to the audit. Auditors have other work responsibilities, too.

N: Lots of people are assigned to some organizations [on the audit schedule].

A: Not every organization is the same size, etc., so auditor needs vary. There are 58 people needed for the audits each year.

N: You have 81 people trained? [Based on the information on the audit schedule]

A: We have more than that—491 people either trained or waiting for training. The organization [MSFC] believes in training.

N: I can’t give advice, but it seems like it would save money to do internal training.

A: In the beginning, we started to train an audit “team,” but it kept growing as more people audited. [From escort:] Training can also be taken to help an organization get ISO prepared, not necessarily to be an auditor.

N: Let’s see some internal audits. How can you tell if all elements have been covered?

A: Organizational representatives help plan the audit and outline the elements to be covered in their organization.

N: Are you making a matrix to make sure all element areas are covered?

A: Organizations are not doing work in all element areas. We also look at other areas besides just ISO.

N: Let’s look at the audit reports for QS, PS, FD, ED, RS, TD, CD [Draft]. [After looking at a report] What does your document say about NCRs? Since the audit was in July, when do the NCRs need to be worked, closed, etc.?

A: Discussed timeline for NCRs—how they are assigned, targeted, closed, etc.

N: Are your audit report numbers similar to ours?

A: Discussed the way Marshall audit reports are numbered.

N: Is your “observation” a finding?

A: All observations are put into the final report with any major or minor findings.

N: What does category “Plus” mean?

A: It is a way of giving the organization a “pat on the back.”

N: Let's go to the next audit.

A: That would be PS. In a different audit, there was a disagreement on a finding. You might want to look at it.

N: It is important to "move your system forward," so hopefully the disagreement has been resolved.

A: It was—a long time ago.

N: All auditors are being trained "outside"?

A: Right now they are. [Back to audit report] Note that MSFC adds two additional "elements" – 4.21 is Safety and 4.22 is Environmental Health and Safety.

N: Next report.

A: FD. This organization has had lots of changes in the organization.

N: What kind of changes?

A: New people, new jobs, etc.

N: Next report.

A: ED

N: There are lots of "pluses" here. What is PPE?

A: Personal Protection Equipment. We have dangerous chemicals onsite, so we want people to be trained and prepared (safe). ED is an actual Lab.

N: Next report.

A: RS

N: Next Report.

A: TD. TD is a big organization

N: Does the report list the auditor?

A: There is a [hyper]link in the report that leads to the auditor.

N: Was it a team?

A: Yes. The team is listed on the chart and also shows which members were "under instruction." How to read the audit team chart was explained. Auditors who are under instruction (UI) have to be paired with someone who is a trained auditor. The UI auditor goes through the whole process with the team – preplanning, audit preparation, interviews, etc.

N: Let me see the draft report.

A: CD. This report is currently being prepared. Auditors email their notes to me for review. If something is missing, I ask for further information. The auditors type up the information. I format the report and send it to the audit team for review. Once the report has been approved, the clock starts on any NCRs. (If a discrepancy comes up and can't be resolved between the organization and the lead auditor, it gets "bumped up" to me. If

I can't help resolve the issue, it then goes to the management representative who has final authority on it.) Additions have been made to the draft since it was printed out for this meeting.

N: What changed?

A: Acronyms, etc.

N: Who was the lead auditor and where does he work?

A: XXXX, PS40.

N: Are you careful about auditor independence?

A: Yes. [Showed him the auditor schedule chart] The auditor schedule even indicates that the organization being audited can't supply auditors for that audit.

N: You do a good job. Audits are detailed.

A: There are still areas that need work, but it has gotten much better since...

N: Things are done differently here than in other large companies (such as Raytheon, etc.). They have an audit team dedicated to audits. I've seen it this way too. It just threw me to see so many people trained. Are the people certified by RAB or XXXX? You know that colleges now carry accredited courses. You need to make sure you use accredited/certified courses/training. Also you need to use 9001:2000 training now. Don't train any more people to the 1994 version.

A: Discussed training and using certified classes, etc.

N: Thanks. You are doing a good job.

A: Thanks. Are we in trouble?

N: Not with the internal audit program.

Date:	8/28/01
Shift:	Afternoon
ISO Element(s):	4.14, Corrective & Preventive Action
Auditee Organization Code:	HEI
Building:	4471/C114C

N: What is the quality policy?

A: Auditee stated the answer verbatim.

N: Asked about specific open RCARS.

A: Explained why RCARS were open and when others were closed. Signed off on forms and made copies.

N: What about customer complaints?

A: We don't really have any complaints right now. We have 38 Quality Comments, but all were good responses.

- N: What is this QualComm System and how does it work?
A: Shows him the form and system on the website.
- N: Can I see some recent entries?
A: Yes. Clicks on the site. Randomly selects a few reports. Also shows the master list of all comments. Explains the system.
- N: Do you have the Internal Audit Findings?
A: No. We don't hold those here. Explains everything that is held in this area. QSDNs, DRs, QualComms, RCARs.
- N: What is RCAR?
A: Recurrence Control Action Reports. Explains terms, and DRs.
- N: Do they do causal analysis on the DRs?
A: Yes, but I don't know the level of detail of the analysis. Shows him the list of all DRs and randomly selects record #6962, #6992, and #6993. Explains the DR system.
- N: Who's really keeping track of this system?
A: The directorates keep track of various DRs. (Escort assists in explaining DR / Non-conforming product process.)
- N: Do you give them classifications or separate groupings?
A: Yes. Shows him the screening criteria. Explains the process.
- N: Let's see the RCARs again.
A: Randomly selects #175 and goes through the form. This is the only open RCAR.
- N: Let's take a look at #619 and #179.
A: Explains these on the system. We also keep hard copies of all RCARs in our records.
- N: Goes over information again to make sure there is no misunderstanding about DR's, RCARs.
A: Discusses systems again. Then explains the closure process and time limit for screening/dispositioning.
- N: The only question that I have is "Why are the DRs are staying open so long?"
A: The nature of our work is lengthy and things move rather slowly on projects because some of the due dates are years away.
- N: Reviews RCARs again and writes down sample information for his records. I thank you for your time.

Date:	8/28/01
Shift:	Afternoon
ISO Element(s):	4.14, Corrective & Preventive Action
Auditee Organization Code:	QS40

Building: 4203/ 3rd floor

- N: This is a follow-up on Non-conformances. Please show me the full list of non-conformances.
- A: Shows the website database and explains the system in detail.
- N: Open up NCR#446-455. He notices that these NCRs will be late as of tomorrow, and writes down these NCR #s.
- A: Explains the process and shows the minutes of the Implementation Team meetings. Explains the closure process.
- N: How do you determine what is reasonable with target closure date.
- A: Yes, but we try not to second-guess the organization. We have very few target dates that are unreasonable.
- N: Asks to see other status charts.
- A: Explains various status charts.
- N: Jots down NCR#416-455. These were all the NCRs written for this year.
- A: Prints out NCR schedule.
- N: Asks to review the latest QS audit report, then asks about the QS NCRs. These were numbers #435, #436, #437, and #438.
- A: Explains and answers questions about these NCRs. Thank you for your time.

Date: 8/29/01

Shift: Morning

ISO Element(s): 4.14

Auditee Organization Code: DE01/AD01

Building: 4203

- N: I'm looking at tying in objectives to statistical techniques.
- A: I'm new at this but XXX and XXX can help out.
- N: OK XXX can help out.
- A: They know the details.
- N: We'll look at how statistical techniques are used and future ones to be used for actual assessment; trying to tie statistical techniques to objectives.
- A: To clarify, our goal is to satisfy customers with our project; we have customer satisfaction training module. Addressing our offices that have customers (particularly shuttle, station, headquarters), AD already has surveys, e.g., using a government car and get survey later; Flight Projects sends surveys to program and astronaut office in Houston because they are our customers. Is this what you are looking at?

- N: Yes, internal and external; there are 15 entries in database now and they are all positive.
- A: The Center Director has sidebar goals and stretch goals. Try to meet stretch goals. As the head of Flight Projects I tried to get “excellent” rating from JSC (customer feedback) and at first we rated OK but rating went up on the next survey.
- N: I’m looking at how top management reinforces company’s objectives.
- A: The Center Director came from the outside of MSFC and there is a focus on customers, e.g., XXX serves internal customers and feedback comes from internal sources; some organizations have a hold on this and all know 9K2K is going in this direction.
- N: You can use surveys or complaints to measure satisfaction. All of this is feedback. You can use on-time delivery data or scheduling data.
- A: The Center Director emphasizes schedule, commitment and accountability. We have a way to go but we’re getting better.
- N: What is in management report?
- A: Center Operations goal is 90%. They use surveys, etc. and the sample organization we’re looking at is at 95% and has exceeded their goal.
- N: Raise goal next year.
- A: (Showing charts) There is an actual line and trend line for customer satisfaction. There were 1300 respondents; they used one of the several methods indicated to get feedback. “Rework” was measured and showed a decrease.
- N: Were any procedures changed to meet customer needs?
- A: I would have to check with Directorate; they have raised an awareness of customer satisfaction; there is no data on workload and this could affect level of satisfaction. Several aspects of customer satisfaction were measured, e.g., needs met, knowledge, etc. XXX has made the organization in tune with the needs of the Center; teams were formed to improve service; chart viewed was for 2000.
- N: Weren’t metrics started just two months ago? Why show charts from last year?
- A: Metrics have been in place for three years; could be error in charts and will check with XXX; only one chart was in error.
- N: How was this measured? Was it rated 1-5?
- A: Yes, typical way to measure; a 1/2 sheet card and indicate poor, satisfactory, excellent, etc.
- N: If these charts are an average it would be interesting to see why line on chart dipped. There are two quality charts, why are they different?
- A: Could be different organizations; XXX will be called to come over and explain metrics. Each organization establishes their own metrics and are different based on work and customers. QualComm data was merged for customer feedback; all positive; 38 total.
- N: I saw QualComm; 15 for this year; I looked at them.
- A: The Balanced Scorecard is being implemented for next FY.
- N: Good.

- A: XXX customer satisfaction chart – 90% is their goal and they reached 96%. They had a survey with 13 questions on a website; feedback is still coming in and this is an example of a customer satisfaction measure. You can look at the charts to see timeliness.
- N: I would like to see data behind the charts; is there a testing scorecard?
- A: NCR tracking chart was displayed.
- N: You need an action plan when progress declines but these are going the “right” way.
- A: Internal audit charts were displayed by element. Corrective and Preventive Action charts displayed next. Open, average days open, some open for long time but not many actual NCR’s. Blue bar on chart was DR (hardware).
- N: Are negative internal QualComms entered?
- A: Yes, but none have been received yet.
- N: Good.
- A: Alert – preventive action chart – trend charts are used now. Program is being tested to generate charts automatically. Only Facilities is electronic now. Other charts were input manually; our issue is that different metrics are determined by organizations and customers served.
- A: Facilities has timeliness, courtesy (measured by a card). Not all counts have been done for '01 yet. Data gathering is hard for AD. An easy way is needed to analyze feedback without manual loading of data. If you approach this like an analogy, the Center Director and George Steinbrenner (NY Yankees) - The Center Director is like George who needs data on tickets sold, etc. The Director wants to know RBI’s, etc., pitching coach has different metrics.
- N: What info goes into charts; re-dos? Not just customer cards; test results fed in too? Good level for management review; this is what you want for upper management; need backup data for other needs (other management levels).
- A: Sample charts are one manual and one electronic loaded; this chart was to show continual improvement.
- N: OK I understand. What is your quality policy?
- A: Correct answer.

Date: 8/29/01

Shift: Morning

ISO Element(s): 4.3

Auditee Organization Code: Second Gen

Building: 4203

N: What contract will we look at?

A: We’re a new program office; pulling together plan now and will be final in March-April.

N: What program?

A: RLV Reusable Launch Vehicle – 2nd Gen To prepare for decision to replace shuttle or not; we are soliciting activities to look at what design of new rocket may look like.

N: Are requirements in place yet?

A: That is part of assignment; top level requirement is to be baselined tomorrow.

N: Will you make modifications to the shuttle?

A: This is 2nd Gen and will replace shuttle; we have aggressive cost and safety requirements; shuttle won't fit; we are moving away from shuttle, but it was an early consideration. We have contracts maintained in procurement, 23 are in place.

N: Are originals located here?

A: Yes. XXX is our contact in procurement.

N: What I'm doing is contract review, sign off, procedure to make changes.

A: ID technical reason to change and work with program office; Risk Management Board; technical reps to COTR look at data requirements of contracts; we were lacking in some data and COTR brings info on change to program and Board. Procurement makes changes.

N: Changes are initiated in your office?

A: Yes, goes through Board; there is an agreement on program and contracts are growing in number, e.g., contractors make engine and we pick one; others are designing vehicles, we build prototype where possible.

N: I went to test cells in an earlier audit; can engine be used again?

A: Yes.

N: What is the quality policy?

A: Correct answer.

N: I'd like to look at PFA.

A: Project Formulation Authorization viewed by auditor; February 10, 2000, readiness review April 2000.

N: Explain readiness review.

A: Top level goals and objectives; program goals; acquisition strategy; technical content of program; roadmapping everything HQ asked for in program goals.

N: Who was at readiness review?

A: OMB, HQ, Program Managers; minutes were taken and are on file in program office (in this building). Readiness review document provided for NQA review; program approval flow chart; HQ OWI response.

N: Reviews flow chart

- A: Next review is NAR and working on that now; Non-Advocate Review; audience is not part of program; they assess and recommend to program management council to go ahead then NASA HQ signs.
- N: Does each program get a flow chart?
- A: Yes; chart is generic and out of OWI; NPG and MPG mentioned; program project planning; recommendations and responses back to Code R (our customer); PFA is redundant in some places; written in response to OMB; it commits funds.
- N: Explain readiness review.
- A: (Goes through binder) Stakeholders are in Washington; this is done prior to most expenses starting; next review is NAR which involves a similar process; what are requirements and how to manage; what are risks and how we will manage; focus on lessons learned from shuttle, MARS climate orbiter and other large programs. Talk about how this program will avoid pitfalls; this is a four day presentation; NAR reviews and goes to NASA HQ with recommendation; we have 3 year study on architecture; this is a mature concept phase. Feel comfortable buying some technology, e.g., engine, etc. Shuttle engine is good but dangerous. All NASA Centers are involved except one or two. Acquisition strategy meeting was an intermediate step in May-Dec 2000. Nondisclosure policy??
- N: Yes (9/11/00 acquisition strategy document date). When do you feel you have a final signed contract?
- A: After next review; program commitment agreement (PCA) being worked now; 5 pages; PCA goes to NAR with program plan; they recommend signature and takes about two months. MPG 7120 NASA 7120 explains NAR. Explained wall chart (time line) and showed paper copy of NASA guidance. We are close with our customers; he's in the loop the whole way; result was 22-23 contracts; all contracts are written subject to the availability of funds; there is a clause regarding cancellation of contract.

Date: 8/29/01

Shift: Morning

ISO Element(s): 4.3

Auditee Organization Code: ED03

Building: 4487

N: Is this a program office?

A: This is ED03 Eng Technical Development Office; my office is one program within ED03. Space Environments and Effects Program (SEE) project plan; procurement has contracts.

N: I'm looking for the agreement to proceed with the project.

A: We are within Code R program and that's where we get resources; project plan signed by Center Director; "program" because there is no "end" date.

N: Looking at customer agreements.

A: No formal contract.

N: Any reviews? Readiness reviews?

A: We are a circle and don't fit into a square; let me explain work we do; part of Code R; give funding to SEE program; have an NRA; we will have 14 contracts by end of FY; we will manage those contracts; we support program SEE; we do not go to PMC; my money is not institutional, e.g., goes to ED then to SEE; it's direct from HQ; we have project plan and export control plan; IAW MPG 7120.1, we are technology and not hardware; not a good fit into that MPG. Working on a technology project plan guide. We have milestones but not like hardware milestones; we approve payments IAW progress on contract; our processes are documented by project plan and export control plan.

N: Not sure you fit into 4.3, no signed contract with HQ, may fit into 4.6.

A: Program came to MSFC in 10/95 and there are documents to support transfer of program. Zero base review, no MOA annually.

N: Project plan is dated 11/7/99.

A: Contracts for deliverables.

N: Project plan for each contract?

A: No, the project plan is for SEE and will update if mission ever changes; responsibility from HQ to MSFC.

N: Do you have a copy of Quality Manual? Want to see how you fit into 4.3; is there a documented agreement with HQ?

A: There is a POP (Program Operating Plan).

N: Can I see one? Do you deliver software and is there a contract?

A: Yes and it is in procurement.

N: That almost falls into 4.6.

A: That's how I do work, with contracts, not civil servants.

N: Who attended POP review (reviewing documents)? Are there minutes or attendance sheet?

A: CFO administers meeting, CFO attends, XXX, XXX, and XXX; CFO has final document. Transmittal letter comments to HQ from CFO.

N: Any environmental reviews? ISO 14000

A: No, this is outer space; deals with radiation, etc.

N: Any procedure or process?

A: OWI – paper copy provided.

N: Reviews OWI and looks at applicable documents; project plan, contracts (external), project handbook, guidelines (any flow charts?); views NASA guidance; views MPG7120.1; looking at MMM.

A: There is a draft technology project plan guidance floating around but I don't think it will become a reality. 80-90 % of agency guidance applies to hardware project plans.

N: What is an MPG?

A: Marshall guidance.

N: (Takes cell phone call at 10:15) What is quality policy?

A: Correct answer.

N: Like round box in square hole; trouble grouping; will let it go and write up prior visit; we're behind schedule; don't think I'll see signed agreement.

A: May be letter transferring program to MSFC.

N: This is better to audit on 4.6.

A: SEE is in strategic plan and signed by the Center Director; HQ is our customer.

N: By Center Director?

A: I'll get a copy of the implementation plan showing HQ requirements.

N: Some have readiness reviews.

A: That is for flight hardware; yearly reviews with HQ are a new requirement as of two weeks ago.

N: Sounds like 9K2K.

A: ED and Center strategic plans provided

N: Where are you in here?

A: Shows SEE information

N: OK – but I won't write anything now

A: Here is implementation plan.

N: Where are you?

A: Responsibilities listed in back of book.

N: OK

Date: 8/29/01

Shift: Morning

ISO Element(s): 4.10 and 4.12

Auditee Organization Code: ProSEDS (ED11)

Building:

N: Start with test procedure; reviewing document ED11-01-009 6/20/01; explain what you are doing.

A: Battery for ProSEDS; doing series of charge and discharge cycles to verify capacity.

- N: How do you dispose of battery?
A: Talk to vendor and safety office; handled as hazardous material.
- N: Where does this fit into test series?
A: This is only one requirement of battery being verified; environmental requirements have already been tested.
- N: Trying to see procedures; viewing flow chart; is this your test plan?
A: Test procedure; environmental procedure is a separate OWI.
- N: Is this the battery serial number? Is this run 11?
A: Yes, this is the first run for this battery unit.
- N: Just one battery?
A: One at a time; 3 batteries.
- N: What is this?
A: Part tag number.
- N: Can I see part tag? (reviews tag) OK. Is this where you record results?
A: No; results are in body of procedures; beginning stages of test now; shows calibration equipment used in test set up; description of process; signatures on file; step by step, hook up cables, etc.; we are beginning 6 hour charge; will record room temperature, etc.
- N: (Questions a measurement)
A: Verifies; records date and time of completion.
- N: This is good – all steps signed off up to current step.
A: Copy of master procedure for each run; many steps but not a lot of time.
- N: Where is battery? OK. What is quality policy?
A: Correct answer.
- N: Is this final test?
A: Yes, before integration into flight panel, then more environmental and shock tests.
- N: Are required tests in this plan? If pass test, what happens to battery?
A: Signatures and pass off to integration personnel tested at other levels; this is final functional test.
- N: Can I see test equipment and calibration?
A: Shows equipment and inspection stickers.

Date: 8/29/01

Shift: Morning

ISO Element(s): 4.10 and 4.12

Auditee Organization Code: Stamp Control QS
Building: 4705

N: What are we looking at?

A: Stamps. Stamps are issued from database.

N: Process stamps? In process stamps? Please show me completed documents.

A: This is on ProSEDS where you just came from.

N: Asks a question about stamps.

A: Answered question regarding QS stamps issued out of this office. I have nothing to do with other stamps (on document they are viewing); must not have gone through those steps (not stamped).

N: Why skip steps?

A: Part of work was not needed and therefore not stamped.

N: Was that in writing?

A: Done by phone; all work could be verified at once and visually observed.

N: Show procedure.

A: On inspection and test.

N: Yes.

A: Procedure on acceptance reporting; fabrication and assembly operation; TPS reviewed in beginning.

N: Reads procedure – what is a part tag?

A: Attached to completed product (shows sample).

N: Views flow chart in procedure.

A: Can pull up OIs on database for QS10 and locates on computer. Prints out No. 18. Describes stamps on document; not all steps must be stamped.

N: Is that documented in writing? Describe waiver.

A: Described bake out waiver to specification.

N: Let me see files on assemblies.

A: Part tags? No assembly with TPS; want to see where something was assembled on a TPS?

N: Yes. (views file)

A: This TPS took one day; other one you looked at took one month.

N: (Looks at TPS files) Tests run in 2000; can I look at 2001? (views files)

A: TPS (test preparation sheet)

- N: Explain steps.
A: Hardware assembled at MSFC mostly by contractor. This one is unusual because NASA scientist performed test and wrote procedures as he went. QS checked; this is an unusual case. Technology is state-of-the-art and he wrote policy and performed test himself. Certified shop personnel had to do staking and soldering; XXX is the employee. The inspector on this job just went to lunch – you can talk to her later.
- N: OK I want to talk to her later about stamps.
A: Inspector was not with him during the whole 6 week test.
- N: Why are other parts stamped?
A: Auditee explains work needing certification vs. work scientist did himself. All work is signed off and inspected; stamp indicates QS witnessed operation; prior steps were preparation and can be observed later.
- N: Where is inspection and test procedure?
A: Provided copies of QS10-QA-003 rev B and QS10-QS-018 rev B (not reviewed). Views org issuance. Reading this looks like everything should be stamped.
- A: Corner stamps and date indicates all items accepted. Individual stamp on a step means must have this stamp to move to next step. Staking is a special process. Labeling did not require an inspector to be present and could be looked at later when staking was viewed. Screws cut off and deburred in machine shop. If there had been a work order, the operator would sign off.
- N: Is this the only sensor assembly? How many were built?
A: We can look on parts tag. I think there were three. Verified three sensors, nos. 401, 402, 403.
- N: What is 350?
A: A level of assembly. Additional work was done. Alignment affected designation f (sensor) A, B, or C.
- N: OK. When was alignment done?
A: Reviews documentation. Need to talk to XXX to be sure.
- N: What is the quality policy?
A: Correct answer.
-

Date: 8/29/01

Shift: Morning

ISO Element(s): 4.10 and 4.12

Auditee Organization Code: X-38

Building: 4705

N: Where is paperwork for test failure?

A: Test procedures; in vacuum; TDR is test Discrepancy Record; anomaly begins procedure.

N: Views report. Has this been fixed yet?

A: Action items.

N: At what point in test did failure occur?

A: Vibration; reviews transcript; ran test all the way through. One channel lacked continuity; pin engagement. Did not have to halt test.

N: When did you learn it was bad?

A: Voltage tracer after testing; voltage dropped off. Moved to thermal vacuum test; firing and went OK; then another vibration test. Knew for sure at second TDR.

N: When did you stop testing?

A: (Looking in second book). Described test and checked out part.

N: Will you fix?

A: Yes, test must be repeated also.

N: Is this normal?

A: Depends on root cause.

N: Looks at TDR number. Does it match test?

A: TDRs are numbered in numerical order; 1st failure 001 for that procedure, etc. MTCPQS-X38-302. The other book test procedure is MTCPQS-X38-301.

N: Why aren't pages numbered 2 of 3, 3 of 3, etc.?

A: Done at end when # of pages is known.

N: Reviews procedure and questions a step in the process.

A: Engineer explains that part of test and explains signatures on document.

N: Questions regarding retest. Are there missing pages at end? How would you know? Final page not noted.

A: Not at final yet. Need to know cause; work order for shop work; engineer will take measurements.

N: Views part number on work order

A: Explains work order; contractor procedures.

N: Where is customer number on test report?

A: Report occurred before work order.

N: Look at work order number in computer.

A: DR and TDR on this test; need planner to access work order.

N: Should there be 3 or 4 leading zeros on DR?

A: Should be 4

N: Let's find work order number and verify part number.

A: Should have had part number; were in a hurry to have something to charge time to; usually there is an open work order to work under engineer's direction; planner can correct. Work order received today (8/28). Production control would have planner add number to work order. Engineer stated that no work had been done yet.

N: OK. You are ahead of the game. 9K2K in three months. We are looking at all sorts of testing. What is the quality policy?

A: Correct answer.

Date: 8/29/01

Shift: Afternoon

ISO Element(s): 4.10 & 4.12

Auditee Organization Code: ED36

Building: 4623

N: Do you do toxic offgassing test?

A: Yes

N: Explain what you do.

A: Hardware going to be in a habitable environment is tested.

N: Is this strictly a simulation by computer?

A: No. We actually put hardware in chambers. We identify offgasses. A computer program gives us the results.

N: One of each grouping?

A: We test anything from high dollar pieces to a baseball cap.

N: Do you have a test plan? Give me an example/procedure.

A: Yes. We test with flight hardware toxicity testing. Auditee gave auditor a draft copy of OWI ED36-OWI-039 Rev B. We are online with Revision A.

N: Who oks the revisions?

A: We make the revisions then it goes through the review process.

N: Why are you still in a draft Rev B when it was marked up in Feb. of 2001? Don't you process the revisions soon after making the changes?

A: XXX is our technical writer. She redlines then it goes to the appropriate people.

N: Are you using a draft Revision B before it has been approved?

A: No. We are using Revision A.

N: I want a copy of the redline copy from XXX. Get me a redline copy.
A: We are not working from Revision B. My procedures have not changed.

N: Can you bring up the OWI on the computer?
A: Yes. Auditee brought up Revision A on the computer.

N: OK. Please keep it on the screen.
A: OK

N: Have you done any test recently? Paperwork.
A: Absolutely. Auditee gave auditor folders of 5 different tests.

N: What are these numbers on the folder?
A: Lab identifying numbers.

N: What is ED36B (01-188)?
A: It is the report number.

N: Auditor compares OWI with tests. Is this the first page of the master report? Do you use these forms?
A: Yes. The forms are not part of the report. These are request forms. NASA MSFC Test Request form. Data sheet is part of the report.

N: Where are the readings?
A: MAC value, offgassed amount, TC. All valves are calculated. .5 would be equal to 1 unit. .5 is good.

N: How many pages are in the OWI?
A: 38 pages.

N: Is this what the new revision will look like?
A: See the footnote at the bottom. This shows the current revision.

N: Is it in here what deviation you are working from an unknown factor?
A: Test is in ab (?) pressure with air using same atmosphere.

N: Auditor looking at another test ED36B (01-189). What is concurring organizations Page ii of IV mean.
A: The contractor and contract changed. This was only a badge change.

N: This is an observation. Why wait until the end of the year to update the OWI? It should be updated sooner.
A: We do update with recent changes.

N: Revisions don't show dates of changes.
A: There are no technical changes between Revisions A and B.

N: Point out to me the page with concurring organizations.

A: OK

N: What is this form?

A: Quality comment. We ask the customer to fill out about our service.

N: Can I see a test done last year? FY2000

A: Yes. ED36B (00-247)

N: Why is the Facility Manager reference deleted on Page 3 from definition?

A: It was deleted because the Facility Manager was confusing for upper management. What is an observation?

N: Not a finding. Only a suggestion.

A: You mentioned observation earlier and I didn't know what that meant.

N: You showed me a draft with no critical changes that should be updated immediately instead of waiting.

A: OK

N: Do you calibrate your own equipment?

A: Some we do. We use certified standards.

N: Do you know the Quality Policy?

A: Auditee read from badge.

N: Do not use anything with marked draft.

Date: 8/29/01

Shift: Afternoon Audit Follow-up

ISO Element(s): 4.17

Auditee Organization Code: QS40

Building: 4202

N: How did you make out?

A: OK

N: How is OK?

A: The organizations have gone in and put the corrective actions on the NCR's. The lead auditor will go in and see.

N: Let's look at some corrective actions.

A: These are the official NCR Reports.

N: Next one

A: They have put in all the corrective actions since yesterday.

N: Auditor looked at the NCR's
A: Here is the nonconformance, cause and corrective action.

N: Do they give a date of completed action?
A: Yes. Target date.

N: Thank You

Date: 30 Aug 2001
Shift: Morning
ISO Element(s): 4.4
Auditee Organization Code: SD40
Building: 4201

N: What is your title?
A: Project manager

N: Please explain your project
A: Solidification Using a Baffle in Sealed Ampoules (SUBSA). The PM then showed pictures of the hardware and explained how the experiment would work. Also presented a copy of the Project Plan.

N: Is Rev A the first revision?
A: Yes

N: Are you doing both the hardware and software for this project?
A: Yes, hardware being done by contractor.

N: Will KSC do all testing?
A: No, most to be done in-house, in labs at MSFC. There will be some integration testing at KSC.

N: What is the project's status?
A: Verification testing begins 10 Sept 01. Hardware is scheduled to be completed 4 Sept. Contractor will do some system testing and deliver to the MDL so testing can begin by 10 Sept.

N: Are all test plans documented?
A: The hardware is going into the Microgravity Science Glovebox (MSG). The integration team conducting the tests writes all the test procedures.

N: Do you approve these test procedures?
A: Yes

N: What are your review processes?

- A: There will be one for hardware and one for software. This project is a high risk/low cost project. IDRs.
- N: Do you have a flow chart?
- A: The schedule is in the project plan (The PM gave the auditor an updated schedule that has not been baselined).
- N: When were your Investigation Design reviews (IDR)?
- A: For software 11/00; for hardware 6/00; Pre-board 6/00
- N: Do you have minutes for these reviews?
- A: Yes; then the PM presented them to the auditor.
- N: What is PFMI?
- A: Pore Formulation and Mobility During Controlled Directional Solidification in a Microgravity Environment Investigation.
- N: The Investigation Design Review is which review, the Preliminary design review?
- A: No, because the project is a high risk/low cost project there will be only one design review.
- N: Is there another process for high risk projects?
- A: No, the process is tailored by the PM and the system engineer and approved by management.
- N: Does the review cover areas such as safety, environmental issues, etc.?
- A: Yes, but primarily for design.
- N: Does the pre-board see all RIDS?
- A: Not necessarily, but can if they so wish. Some are usually discussed.
- N: What team is RID referring to?
- A: Developer (contractor), PM, and System engineer
- N: Who signs the RID?
- A: When closed the final signature is by the PM.
- N: Can I see your Quality Records?
- A: They are kept downstairs by CM. (PM has a copy of the QR and presents some to the auditor)
- N: Why do you have a Rev A to the project plan?
- A: We got smarter.
- N: How do you conduct document changes?
- A: Through ECRs.
- N: May I see an ECR?

A: They are in CM. PM has a copy and presents one to auditor.

N: Do RIDs get numbers?

A: Yes, top right-hand corner.

N: What is the input form number?

A: The review is set up for team numbers. This is a team number.

N: What is the process for handling RIDs?

A: The process is defined in MSFC-MNL-2110.

N: When is the next design review?

A: There is not one. The pre-ship/acceptance is the next review because this is a high risk project.

N: What is the date for the Project Plan?

A: 7 May 2001 (Rev A)

N: Was the date for the IDR 7/28?

A: Yes

N: What is the MSFC Quality Policy

A: To provide quality products and services to our customers.

Date:	30 Aug 2001
Shift:	Morning
ISO Element(s):	4.4
Auditee Organization Code:	SD42
Building:	4201

N: May I see a copy of the Project Plan?

A: Yes.

N: Is there a requirements document?

A: Yes

N: PR-1 is a progress review held 7/16/98?

A: Yes, have had PR-1, PR-2 and PR-3.

N: Is requirements review a technical review?

A: Yes

N: How are the requirements handed out? Not done in a meeting?

A: Correct. The person responsible for this document is in CM and the document is under CM control.

N: Do you have review meetings?

A: Yes, they are called by the Configuration Control Board.

N: Do you have minutes?

A: They are kept by the board secretary and she is in another building, but the System Engineer had a draft reference copy.

N: Do you have a copy of the minutes for PR-1 and PR-2?

A: They are in the Quality records (SE provided copies).

N: Where are you at in project?

A: The SE discuss the trainer and reviews; half way with the PIP and scheduled to be on dock at KSC 11/27/01.

N: Is there a test plan?

A: One in draft, but not yet approved.

N: As requirements change will the test plan change?

A: This can happen, but hopefully not much.

N: Software development is using CDR, PDR, etc.?

A: Yes, but are calling them PRs.

N: Do you have a project plan for both software and hardware?

A: Yes

N: Do you have a g-Limit schedule?

A: Yes, it is a 60-page schedule. Is kept offsite at contractor's office, usually only ask for segments for where we are at the time. We view only incomplete tasks on the schedule. Can get a PDF copy electronically.

N: Pre-board, is it the same as a progress review?

A: No, the pre-board is at the end of the progress review.

N: Does an action item have to be a RID from CDR.

A: No

N: Show me where an action item has been completed.

A: Should show up in the next review.

N: Did you have a PR-4 in July 00?

A: Yes, and PR-3 in Dec 99.

N: Does Pre-board state when meeting was held?

A: In the charts on review schedule.

N: Was the date for PR-2 4/16/99 and 7/16/98 for PR-2?

A: The kickoff for PR-1 was 7/16/98 and pre-board was 7/30/98.

N: What is the quality policy?

A: MSFC policy is to provide quality products and services to our customers.